FIG. 1

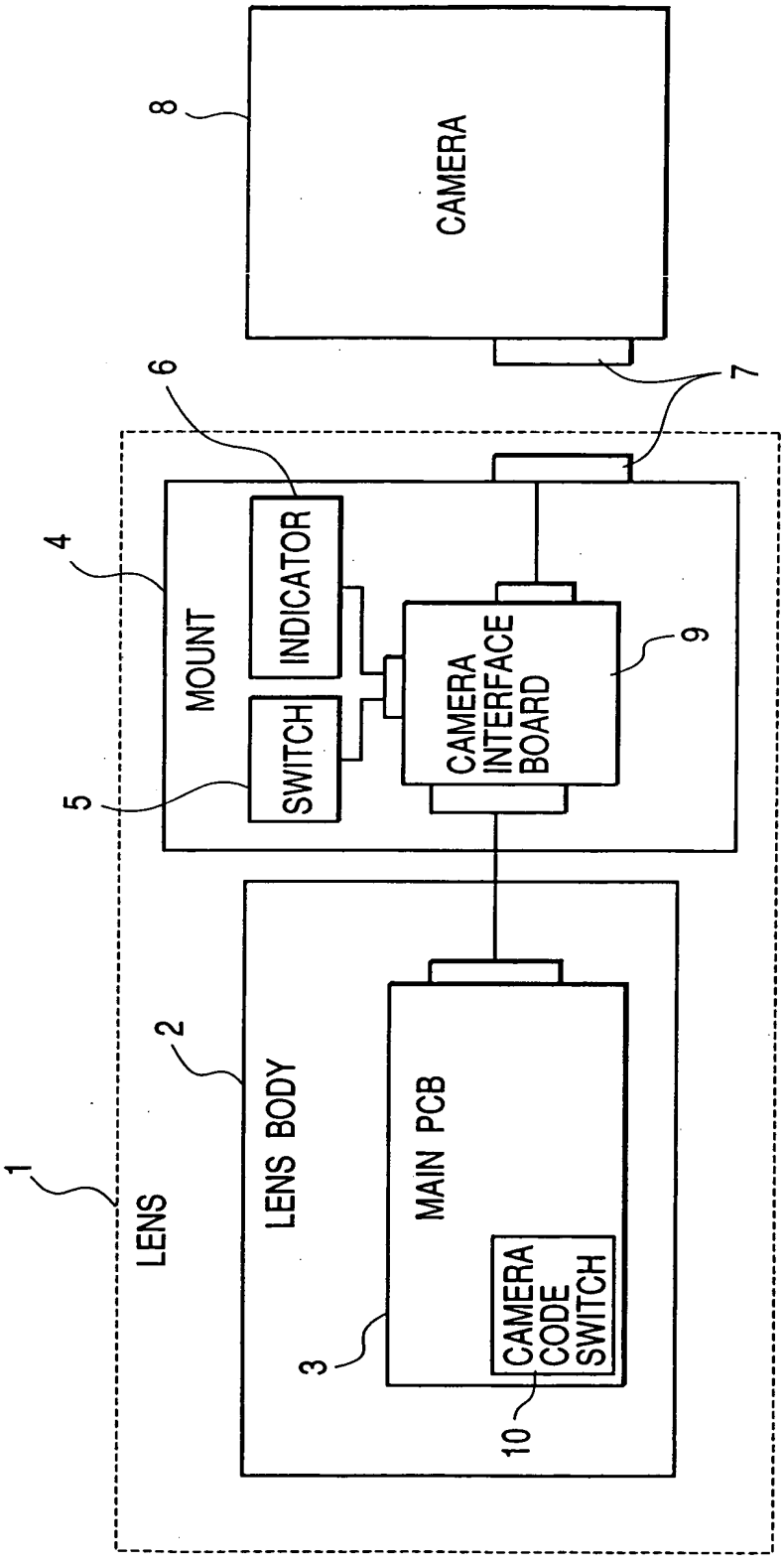

FIG. 2

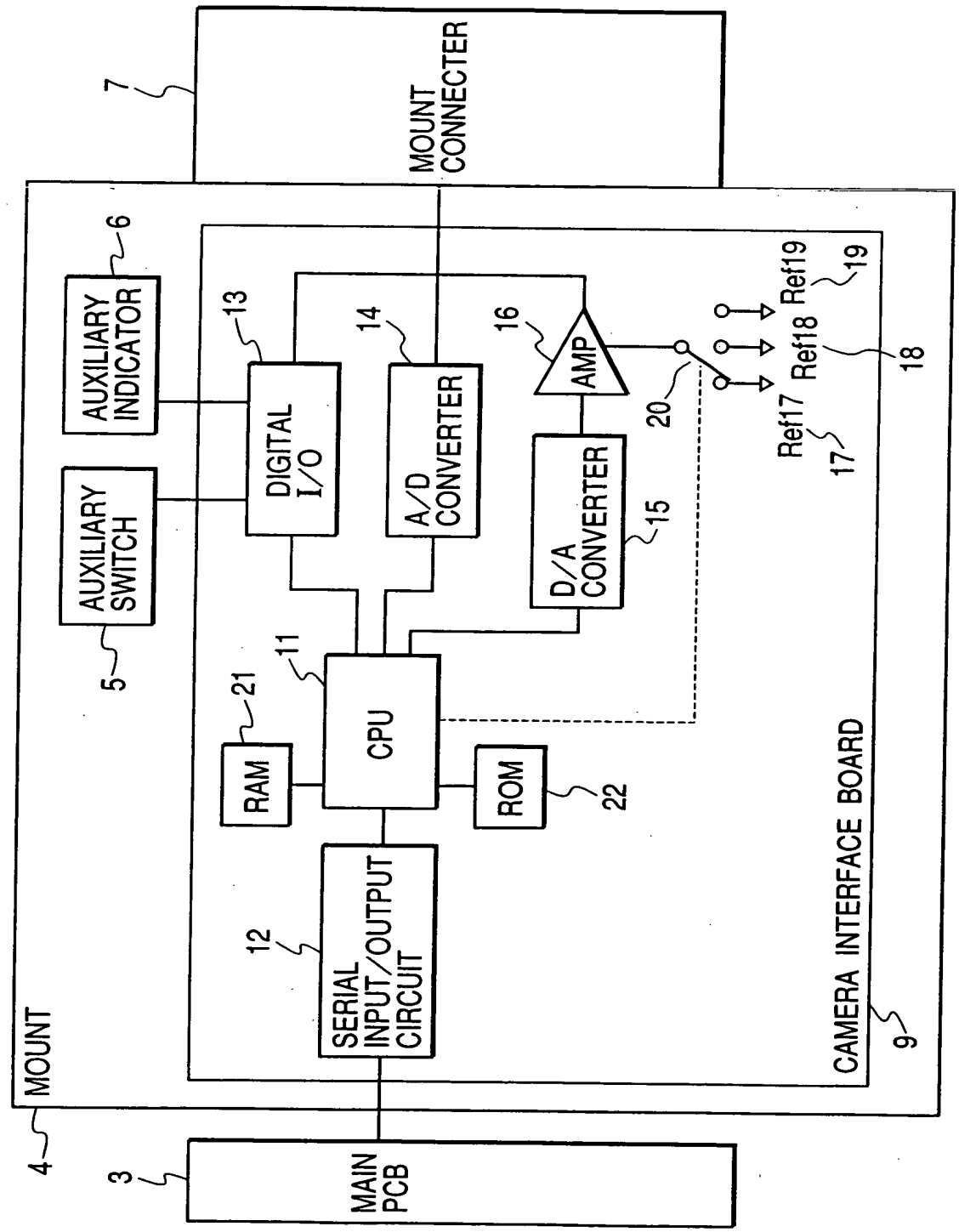

FIG. 3

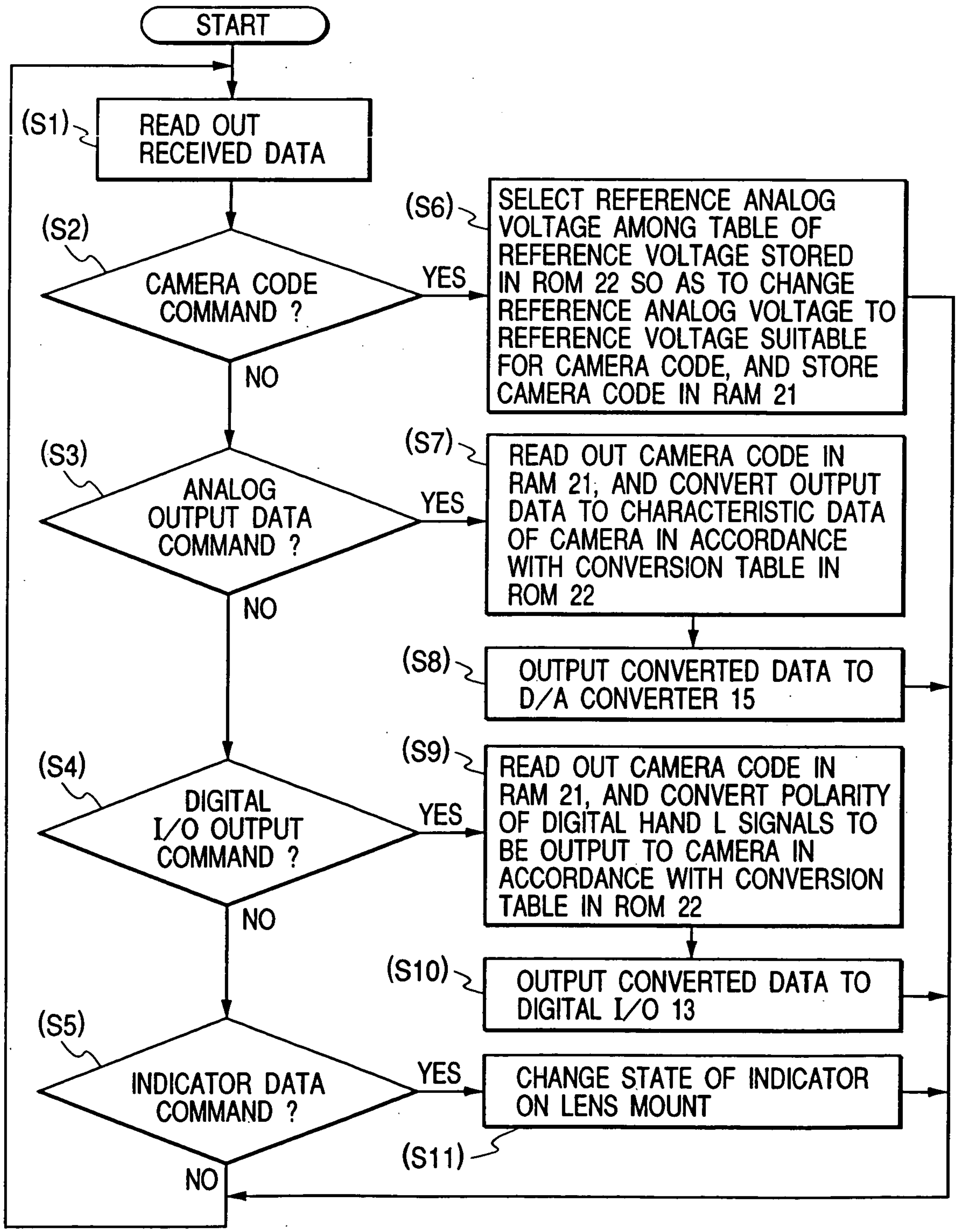
START
(S1) READ OUT RECEIVED DATA
(S2) CAMERA CODE COMMAND ?
YES
NO
(S6) SELECT REFERENCE ANALOG VOLTAGE AMONG TABLE OF REFERENCE VOLTAGE STORED IN ROM 22 SO AS TO CHANGE REFERENCE ANALOG VOLTAGE TO REFERENCE VOLTAGE SUITABLE FOR CAMERA CODE, AND STORE CAMERA CODE IN RAM 21
(S3) ANALOG OUTPUT DATA COMMAND ?
YES
NO
(S7) READ OUT CAMERA CODE IN RAM 21, AND CONVERT OUTPUT DATA TO CHARACTERISTIC DATA OF CAMERA IN ACCORDANCE WITH CONVERSION TABLE IN ROM 22
(S8) OUTPUT CONVERTED DATA TO D/A CONVERTER 15
(S4) DIGITAL I/O OUTPUT COMMAND ?
YES
NO
(S9) READ OUT CAMERA CODE IN RAM 21, AND CONVERT POLARITY OF DIGITAL HAND L SIGNALS TO BE OUTPUT TO CAMERA IN ACCORDANCE WITH CONVERSION TABLE IN ROM 22
(S10) OUTPUT CONVERTED DATA TO DIGITAL I/O 13
(S5) INDICATOR DATA COMMAND ?
YES
NO
CHANGE STATE OF INDICATOR ON LENS MOUNT
(S11)

FIG. 4

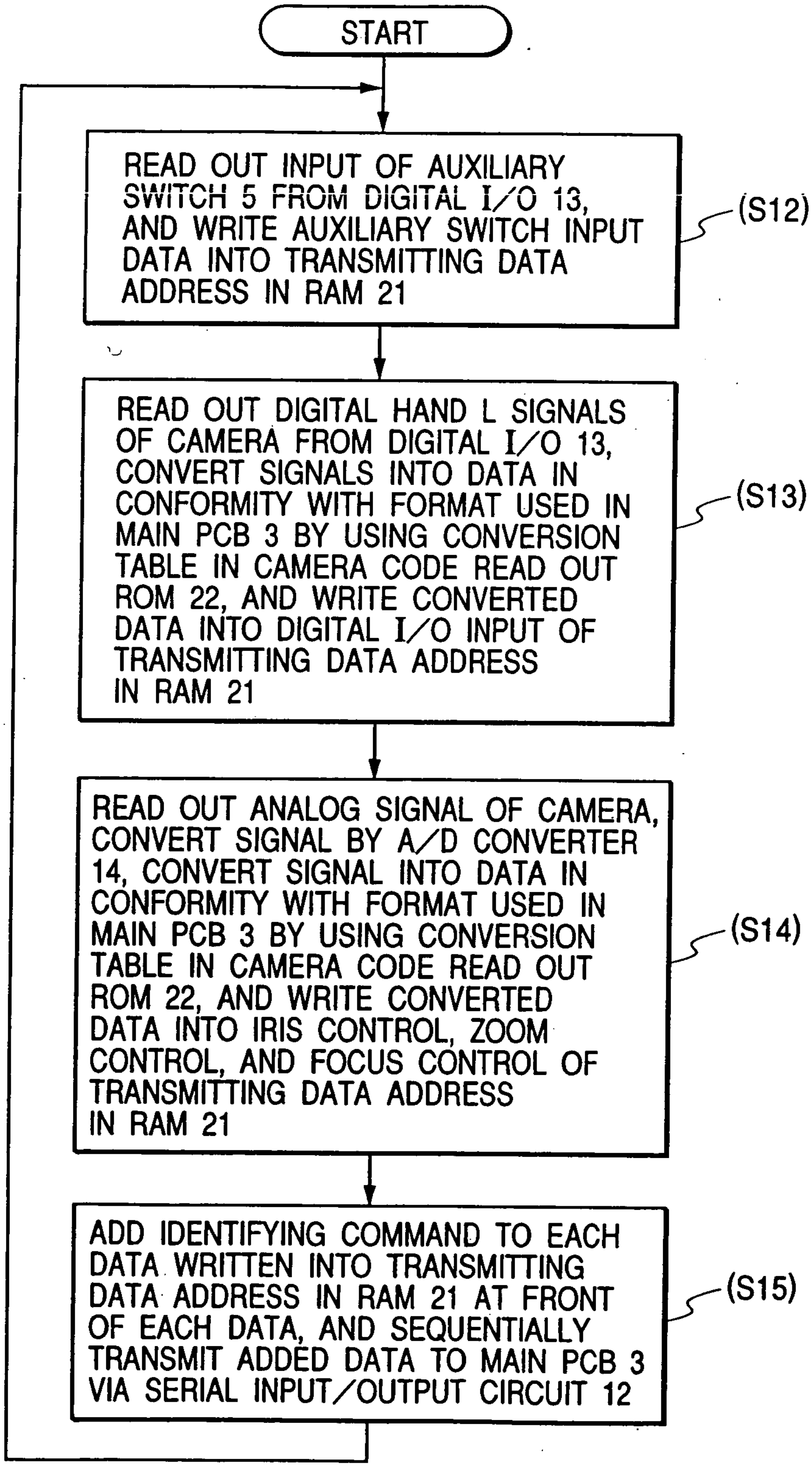
START
READ OUT INPUT OF AUXILIARY SWITCH 5 FROM DIGITAL I/O 13, AND WRITE AUXILIARY SWITCH INPUT DATA INTO TRANSMITTING DATA ADDRESS IN RAM 21
(S12)
READ OUT DIGITAL HAND L SIGNALS OF CAMERA FROM DIGITAL I/O 13, CONVERT SIGNALS INTO DATA IN CONFORMITY WITH FORMAT USED IN MAIN PCB 3 BY USING CONVERSION TABLE IN CAMERA CODE READ OUT ROM 22, AND WRITE CONVERTED DATA INTO DIGITAL I/O INPUT OF TRANSMITTING DATA ADDRESS IN RAM 21
(S13)
READ OUT ANALOG SIGNAL OF CAMERA, CONVERT SIGNAL BY A/D CONVERTER 14, CONVERT SIGNAL INTO DATA IN CONFORMITY WITH FORMAT USED IN MAIN PCB 3 BY USING CONVERSION TABLE IN CAMERA CODE READ OUT ROM 22, AND WRITE CONVERTED DATA INTO IRIS CONTROL, ZOOM CONTROL, AND FOCUS CONTROL OF TRANSMITTING DATA ADDRESS IN RAM 21
(S14)
ADD IDENTIFYING COMMAND TO EACH DATA WRITTEN INTO TRANSMITTING DATA ADDRESS IN RAM 21 AT FRONT OF EACH DATA, AND SEQUENTIALLY TRANSMIT ADDED DATA TO MAIN PCB 3 VIA SERIAL INPUT/OUTPUT CIRCUIT 12
(S15)

FIG. 5

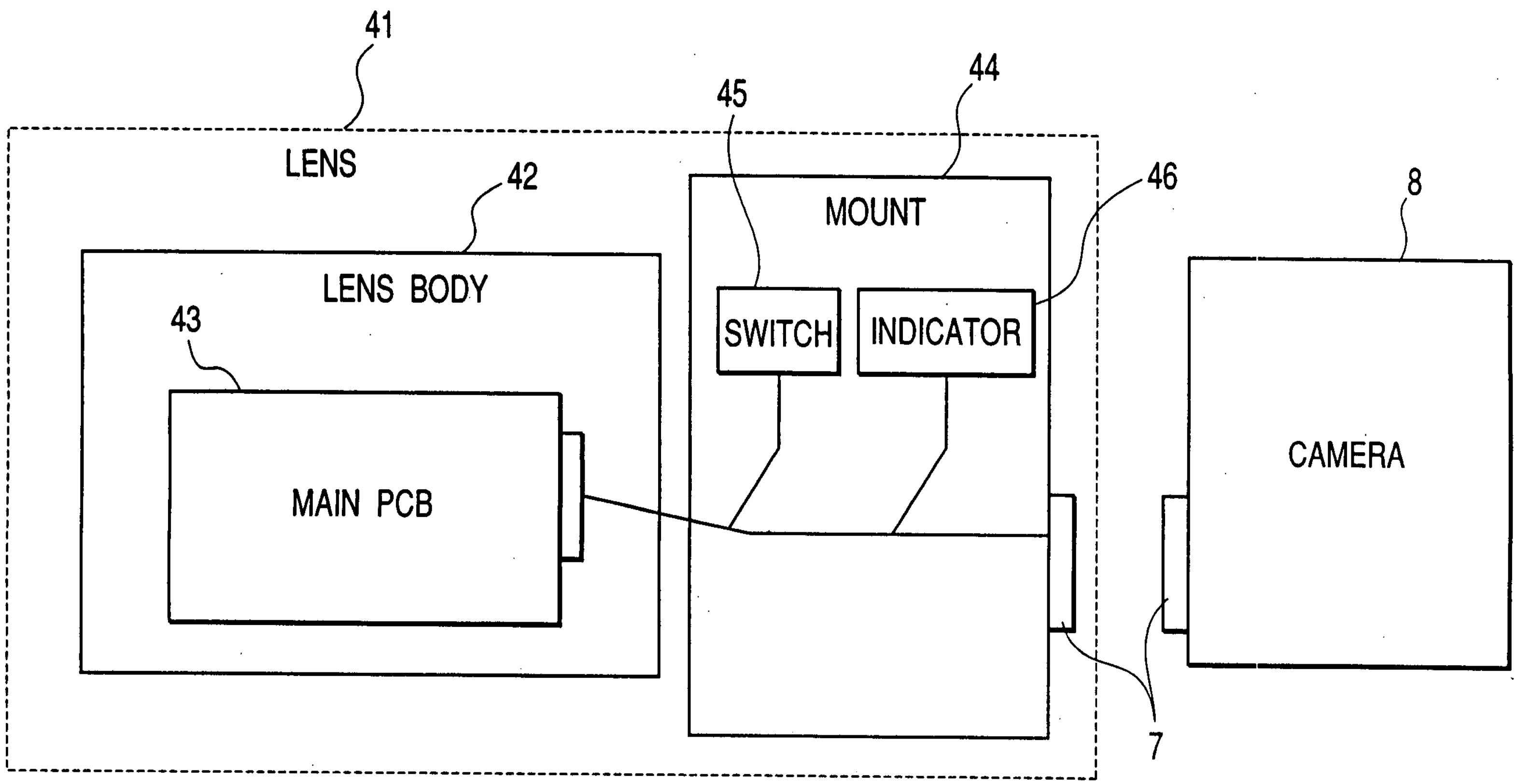

FIG. 7

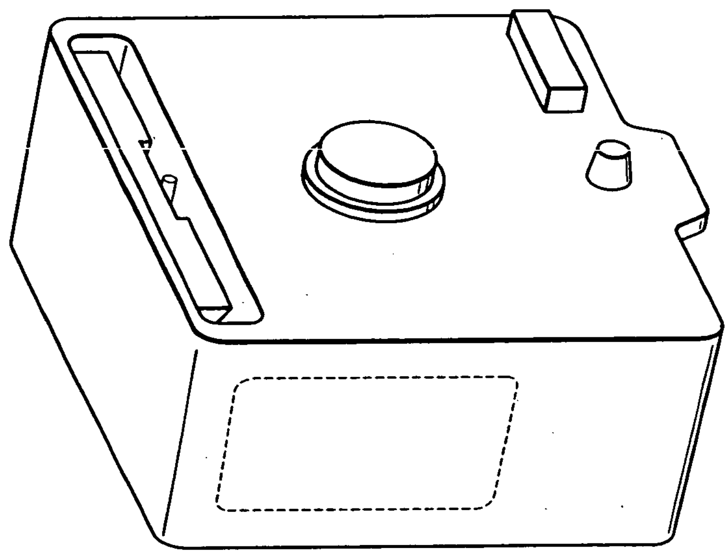

FIG. 6

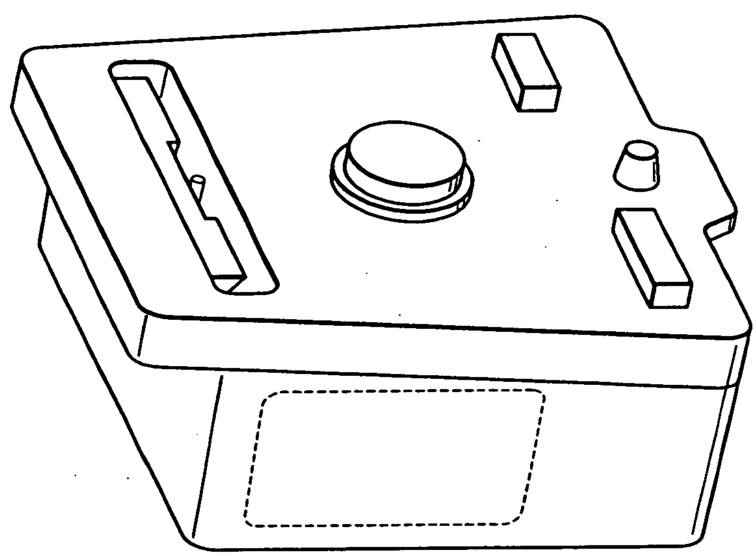

FIG. 8A-1

FIG. 8A

FIG. 8A-1	FIG. 8A-2

CAMERA MAKER	CAMERA CODE 8bit	ZOOM GAIN	ZOOM REFERENCE VOLTAGE	FOCUS GAIN	FOCUS REFERENCE VOLTAGE
A COMPANY	0	833 (DECIMAL NUMERAL)	Ref17	800 (DECIMAL NUMERAL)	Ref17
B COMPANY	1	666 (DECIMAL NUMERAL)	Ref18	700 (DECIMAL NUMERAL)	Ref18
C COMPANY	2	400 (DECIMAL NUMERAL)	Ref19	400 (DECIMAL NUMERAL)	Ref19
D COMPANY	3	700 (DECIMAL NUMERAL)	Ref19	700 (DECIMAL NUMERAL)	Ref19
E COMPANY	4	800 (DECIMAL NUMERAL)	Ref19	800 (DECIMAL NUMERAL)	Ref19
F COMPANY	5	900 (DECIMAL NUMERAL)	Ref18	900 (DECIMAL NUMERAL)	Ref18
G COMPANY	6	300 (DECIMAL NUMERAL)	Ref17	300 (DECIMAL NUMERAL)	Ref17
H COMPANY	7	500 (DECIMAL NUMERAL)	Ref17	500 (DECIMAL NUMERAL)	Ref17
I COMPANY	8	500 (DECIMAL NUMERAL)	Ref18	500 (DECIMAL NUMERAL)	Ref18
J COMPANY	9	800 (DECIMAL NUMERAL)	Ref19	800 (DECIMAL NUMERAL)	Ref19
K COMPANY	A	700 (DECIMAL NUMERAL)	Ref18	700 (DECIMAL NUMERAL)	Ref18
L COMPANY	B	900 (DECIMAL NUMERAL)	Ref19	900 (DECIMAL NUMERAL)	Ref19
M COMPANY	C	700 (DECIMAL NUMERAL)	Ref19	700 (DECIMAL NUMERAL)	Ref19
N COMPANY	D	700 (DECIMAL NUMERAL)	Ref18	700 (DECIMAL NUMERAL)	Ref18
O COMPANY	E	600 (DECIMAL NUMERAL)	Ref18	600 (DECIMAL NUMERAL)	Ref18

FIG. 8A-2

IRIS GAIN 16bit	IRIS REFERENCE VOLTAGE	bit DATA CAMERA CONTROL 8bit	bit DATA CAMERA ANSWER 8bit
800 (DECIMAL NUMERAL)	Ref17	00100011B (BIT NUMERAL)	00100011B (BIT NUMERAL)
700 (DECIMAL NUMERAL)	Ref18	01011100B (BIT NUMERAL)	01011100B (BIT NUMERAL)
400 (DECIMAL NUMERAL)	Ref19	10000011B (BIT NUMERAL)	10000011B (BIT NUMERAL)
700 (DECIMAL NUMERAL)	Ref19	00001111B (BIT NUMERAL)	00001111B (BIT NUMERAL)
800 (DECIMAL NUMERAL)	Ref19	00111110B (BIT NUMERAL)	00111110B (BIT NUMERAL)
900 (DECIMAL NUMERAL)	Ref18	01101100B (BIT NUMERAL)	01101100B (BIT NUMERAL)
300 (DECIMAL NUMERAL)	Ref17	00101101B (BIT NUMERAL)	00101101B (BIT NUMERAL)
500 (DECIMAL NUMERAL)	Ref17	10101001B (BIT NUMERAL)	10101001B (BIT NUMERAL)
500 (DECIMAL NUMERAL)	Ref18	10101000B (BIT NUMERAL)	10101000B (BIT NUMERAL)
800 (DECIMAL NUMERAL)	Ref19	10011001B (BIT NUMERAL)	10011001B (BIT NUMERAL)
700 (DECIMAL NUMERAL)	Ref18	10011000B (BIT NUMERAL)	10011000B (BIT NUMERAL)
900 (DECIMAL NUMERAL)	Ref19	10011011B (BIT NUMERAL)	10011011B (BIT NUMERAL)
700 (DECIMAL NUMERAL)	Ref19	01001011B (BIT NUMERAL)	01001011B (BIT NUMERAL)
700 (DECIMAL NUMERAL)	Ref18	10110011B (BIT NUMERAL)	10110011B (BIT NUMERAL)
600 (DECIMAL NUMERAL)	Ref18	00000010B (BIT NUMERAL)	00000010B (BIT NUMERAL)

FIG. 8B

CAMERA MAKER	TALLLY ON 8bit bit7	EXT 2XON 8bit bit6	IRISAUTO 8bit bit5	PPON 8bit bit4	HEATER ON 8bit bit3	16:9 ON 8bit bit2	ZOOM REMOTE 8bit bit1	FOCUS REMOTE 8bit bit0
A COMPANY	0	0	1	0	0	0	1	1
B COMPANY	0	1	0	1	1	1	0	0
C COMPANY	1	0	0	0	0	0	1	1
D COMPANY	0	0	0	0	1	1	1	1
E COMPANY	0	0	1	1	1	1	1	0
F COMPANY	0	1	1	0	1	1	0	0
G COMPANY	0	0	1	0	1	1	0	1
H COMPANY	1	0	1	0	1	0	0	1
I COMPANY	1	0	1	0	1	0	0	0
J COMPANY	1	0	0	1	1	0	0	1
K COMPANY	1	0	0	1	1	0	0	0
L COMPANY	1	0	0	1	1	0	1	1
M COMPANY	0	1	0	0	1	0	1	1
N COMPANY	1	0	1	1	0	0	1	1
O COMPANY	0	0	0	0	0	0	1	0

FIG. 8C

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
0	1	1	1	0	0	0	0

FIG. 8D

	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
A COMPANY	0	0	1	0	0	0	1	1
INPUT	0	1	1	1	0	0	0	0
EXOR	0	1	0	1	0	0	1	1

FIG. 8E

	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
B COMPANY	0	1	0	1	1	1	0	0
INPUT	0	1	1	1	0	0	0	0
EXOR	0	0	1	0	1	1	0	0

FIG. 9

COMMAND PORTION 1byte	DATA PORTION (DATA PORTION HAS CHANGEABLE AREA)

FIG. 10A

FROM MAIN PCB 3 TO CAMERA INTERFACE BOARD 9
CAMERA CODE COMMAND
ANALOG DATA OUTPUT IRIS COMMAND
ANALOG DATA OUTPUT ZOOM COMMAND
ANALOG DATA OUTPUT FOCUS COMMAND
DIGITAL I/O OUTPUT COMMAND
DISPLAY DEVICE DATA COMMAND

FIG. 10B

FROM CAMERA INTERFACE BOARD 9 TO MAIN PCB 3
AUXILIARY SWITCH DIGITAL I/O DATA COMMAND
CAMERA INPUT DIGITAL I/O DATA COMMAND
CAMERA ANALOG IRIS DATA COMMAND
CAMERA ANALOG ZOOM DATA COMMAND
CAMERA ANALOG FOCUS DATA COMMAND

FIG. 11A

RECEIVING RAM 21 DATA ADDRESS
CAMERA CODE
IRIS FOLLOW
ZOOM FOLLOW
FOCUS FOLLOW
DIGITAL I/O OUTPUT
INDICATING DATA

FIG. 11B

TRANSMITTING RAM 21 DATA ADDRESS
IRIS CONTROL
ZOOM CONTROL
FOCUS CONTROL
DIGITAL I/O INPUT
MOUNT SWITCH INPUT

FIG. 12

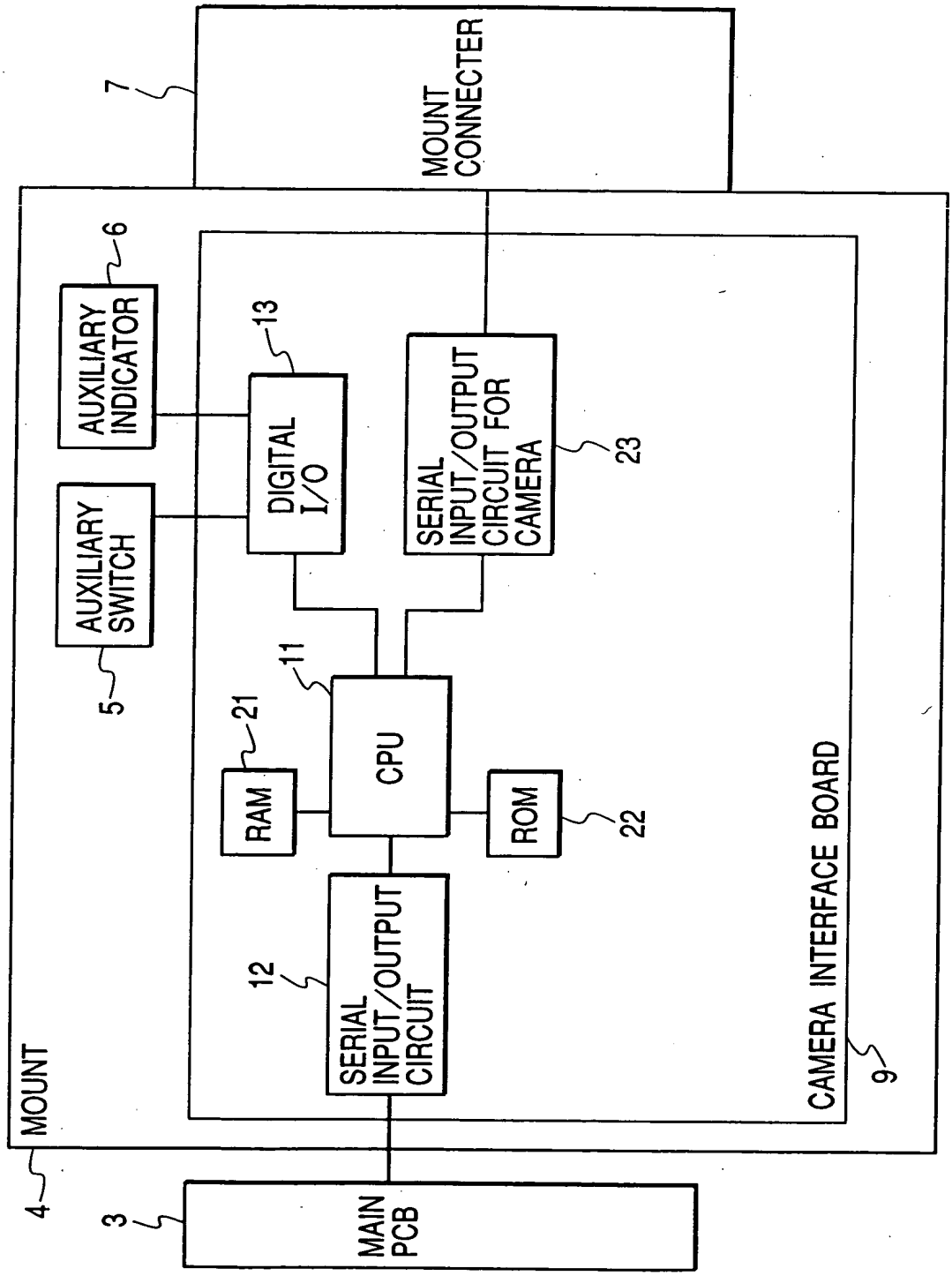

FIG. 13

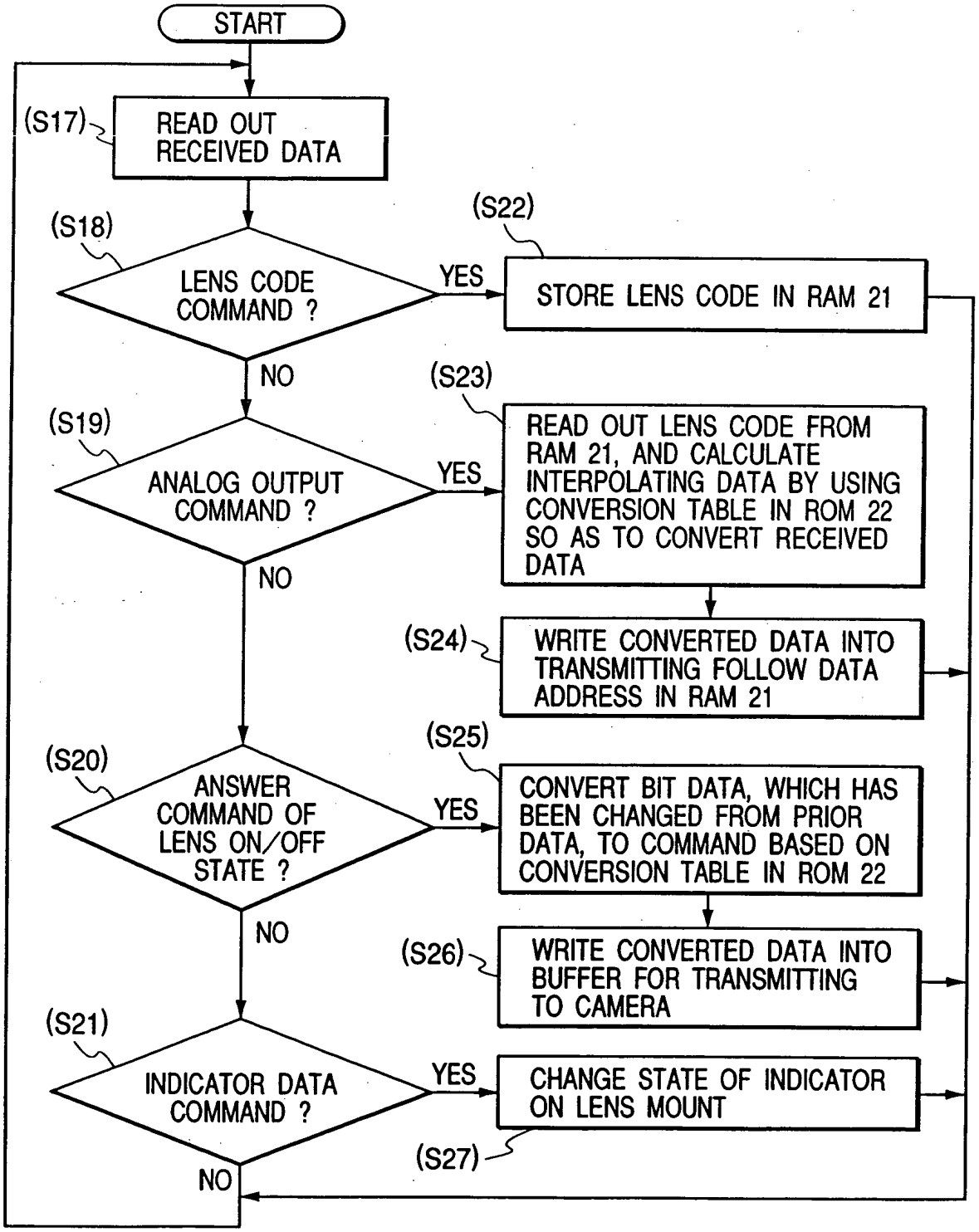

FIG. 14

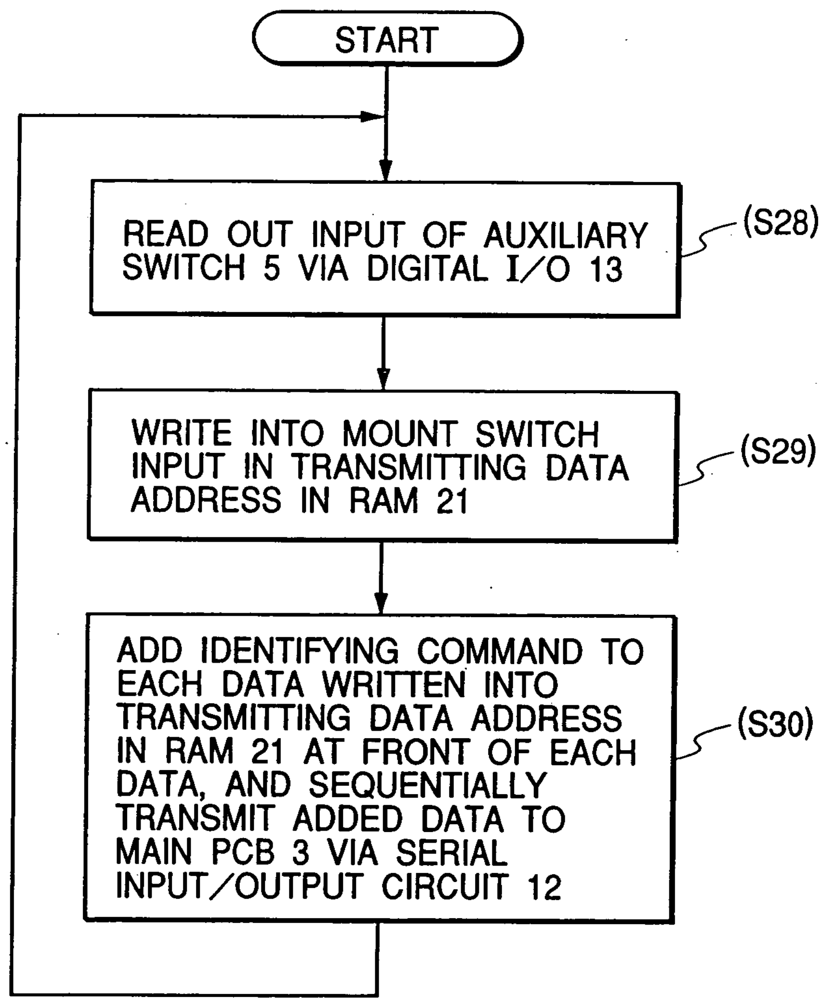

FIG. 15

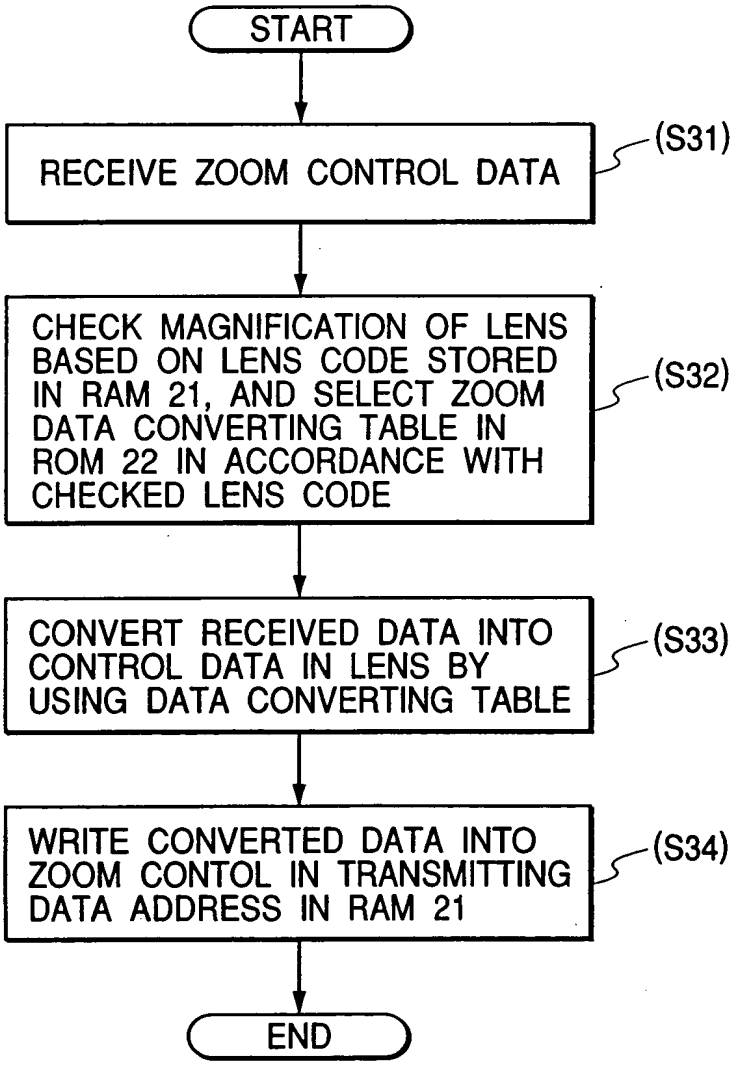

FIG. 16

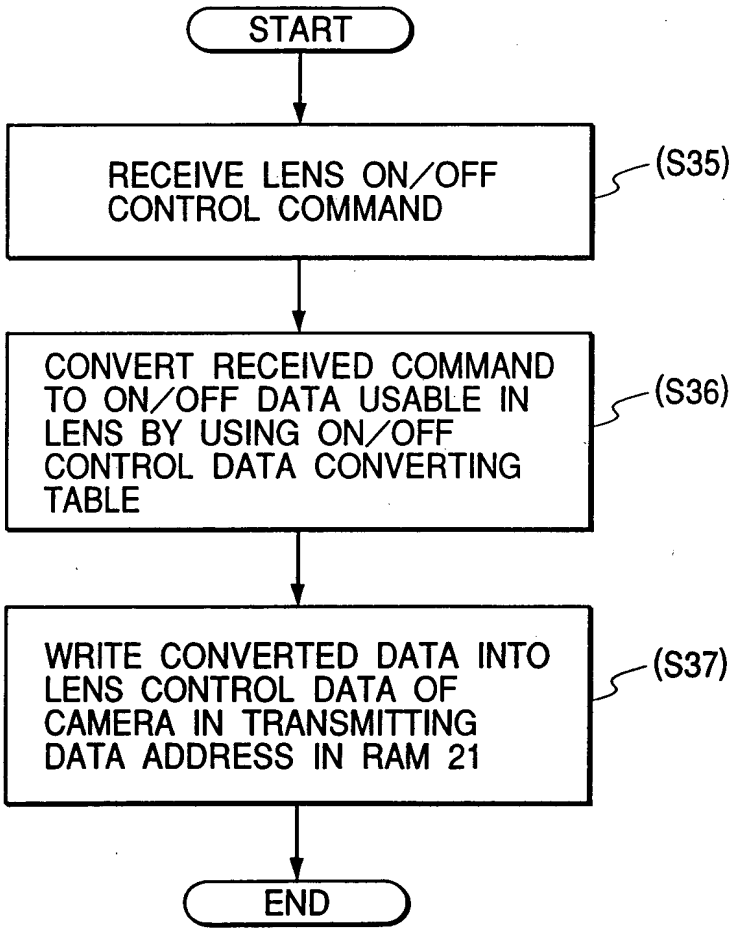

FIG. 17

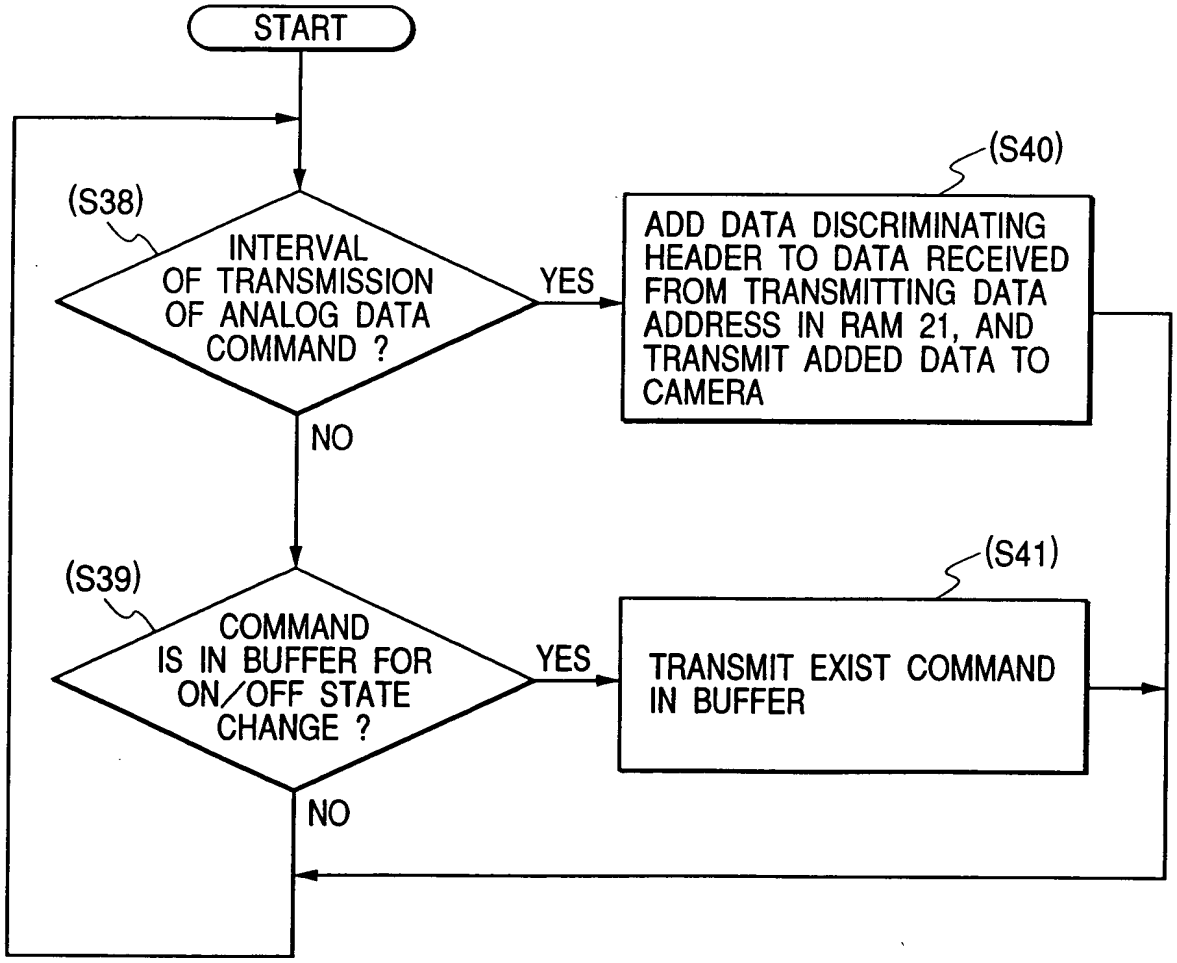
START
(S38)
INTERVAL OF TRANSMISSION OF ANALOG DATA COMMAND ?
YES
NO
(S40)
ADD DATA DISCRIMINATING HEADER TO DATA RECEIVED FROM TRANSMITTING DATA ADDRESS IN RAM 21, AND TRANSMIT ADDED DATA TO CAMERA
(S39)
COMMAND IS IN BUFFER FOR ON/OFF STATE CHANGE ?
YES
NO
(S41)
TRANSMIT EXIST COMMAND IN BUFFER

FIG. 18

LENS CODE	LENS CODE 8bit	ZOOM, FOCAL LENGTH TABLE	FOCUS, DISTANCE TO OBJECT TABLE
20X	0	20X TABLE	20X TABLE
50X	1	50X TABLE	55X TABLE
55X	2	55X TABLE	55X TABLE
·	·	·	·
·	·	·	·
·	·	·	·
·	·	·	·
·	·	·	·
:	:	:	:

FIG. 19

	FOCAL LENGTH									
	7.5	9	·	·	150	·	·	450	·	495
20X WIDE: 7.5mm TELE: 150mm	0	0×0050	·	·	0×FFFF	0×FFFF	0×FFFF	0×FFFF	0×FFFF	0×FFFF
50X WIDE: 9mm TELE: 450mm	0	0	·	·	0×AAAA	·	·	0×FFFF	0×FFFF	0×FFFF
55X WIDE: 9mm TELE: 495mm	0	0	·	·	0×9900	·	·	0×EE00	0×FFFF	0×FFFF

FIG. 20

	F NUMBER							
	CLOSE	22	16	·	·	2.8	2	1.4
IRIS DATA	0	0×6000	0×7000	·	·	0×C000	0×D000	0×EOOO

FIG. 21

KINDS OF COMMAND	ACTUAL COMMAND DATA	bit CONVERSION DATA	MASK DATA
TALLY ON	0×80	10000000 (BINARY DATA)	10000000 (BINARY DATA)
TALLY OFF	0×81	00000000 (BINARY DATA)	10000000 (BINARY DATA)
EXT 2X ON	0×82	01000000 (BINARY DATA)	01000000 (BINARY DATA)
EXT 2X OFF	0×83	00000000 (BINARY DATA)	01000000 (BINARY DATA)
IRIS AUTO ON	0×84	00100000 (BINARY DATA)	00100000 (BINARY DATA)
IRIS AUTO OFF	0×85	00000000 (BINARY DATA)	00100000 (BINARY DATA)
PP ON	0×86	00010000 (BINARY DATA)	00010000 (BINARY DATA)
PP OFF	0×87	00000000 (BINARY DATA)	00010000 (BINARY DATA)
HEATER ON	0×88	00001000 (BINARY DATA)	00001000 (BINARY DATA)
HEATER OFF	0×89	00000000 (BINARY DATA)	00001000 (BINARY DATA)
16:9 MODE ON	0×8a	00000100 (BINARY DATA)	00000100 (BINARY DATA)
16:9 MODE OFF	0×8b	00000000 (BINARY DATA)	00000100 (BINARY DATA)
FOCUS REMOTE MODE ON	0×8c	00000010 (BINARY DATA)	00000010 (BINARY DATA)
FOCUS REMOTE MODE OFF	0×8d	00000000 (BINARY DATA)	00000010 (BINARY DATA)
ZOOM REMOTE MODE ON	0×8e	00000001 (BINARY DATA)	00000001 (BINARY DATA)
ZOOM LOCAL MODE OFF	0×8f	00000000 (BINARY DATA)	00000001 (BINARY DATA)

FIG. 22A

COMMUNICATION COMMAND FROM CAMERA TO LENS
IRIS F NUMBER CONTROL COMMAND
ZOOM FOCAL LENGTH CONTROL COMMAND
FOCUS OBJECT DISTANCE CONTROL COMMAND
LENS ON/OFF CONTROL COMMAND

FIG. 22B

TRANSMISSION COMMAND FROM LENS TO CAMERA
IRIS F NUMBER FOLLOW COMMAND
ZOOM, FOCAL LENGTH FOLLOW COMMAND
FOCUS, OBJECT DISTANCE FOLLOW COMMAND
LENS CONTROL ON/OFF ANSWER COMMAND

FIG. 23A

COMMUNICATION FROM MAIN PCB 3 TO CAMERA INTERFACE BOARD 9
LENS CODE COMMAND
IRIS FOLLOW DATA COMMAND
ZOOM FOLLOW DATA COMMAND
FOCUS FOLLOW DATA COMMAND
DIGITAL I/O OUTPUT (ANSWER TO CAMERA)
INDICATING DATA

FIG. 23B

COMMUNICATION FROM CAMERA INTERFACE BOARD 9 TO MAIN PCB 3
IRIS CONTROL COMMAND
ZOOM CONTROL COMMAND
FOCUS CONTROL COMMAND
LENS ON/OFF CONTROL COMMAND
MOUNT SWITCH INPUT DATA COMMAND

FIG. 24A

DATA ADDRESS IN RAM 21 FOR TRANSMITTING TO MAIN PCB 3
IRIS CONTROL
ZOOM CONTROL
FOCUS CONTROL
DIGITAL I/O INPUT (LENS CONTROL SIGNAL FROM CAMERA)
MOUNT SWITCH INPUT

FIG. 24B

DATA ADDRESS IN RAM 21 FOR TRANSMITTING TO CAMERA
IRIS NUMBER FOLLOW
ZOOM, FOCUS DISTANCE FOLLOW
FOCUS, DISTANCE TO OBJECT FOLLOW
DIGITAL I/O OUTPUT (ANSWER TO CAMERA)